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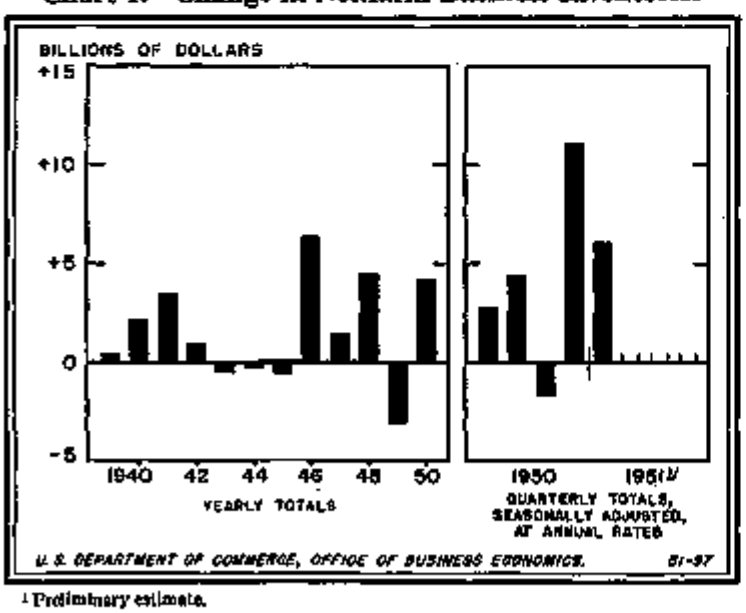
Trend of Inventories in the Mobilization Period

FROM the middle of last year to the end of February 1951 the book value of manufacturers', wholesalers' and retailers' inventories has expanded by approximately $10½ billion or 19 percent, to a total of almost $65 billion. Much of this increase is a reflection of the sharp rise in prices which developed almost immediately after the outbreak of hostilities. Close to one-third of the rise in book value represents physical accumulation; this constitutes a sizable advance and has brought the real volume of inventories in the first quarter to the highest point on record.

The recent expansion marks the third time in a little over 10 years that the economy has witnessed a rapid and substantial rise in its business stocks. This may be seen in chart 1, which shows the net change in the physical volume of nonfarm inventories valued at prices current during the year or quarter.

The first expansionary wave—from 1940 to 1942—like the present was influenced in part by fears of shortages and prospects of higher prices. It subsided not long after Pearl Harbor and gave way, in the 3 years which followed, to some decumulation, as a result of wartime restrictions. The second—from 1946 to 1948—which began as a correction of the depleted status of inventories after the end of the war, apparently overreached itself in the latter part of 1948 and was followed by a marked decrease in inventories in 1949.

Chart 1.—Change in Nonfarm Business Inventories



[1] Preliminary estimate.

Source of data: U. S. Department of Commerce, Office of Business Economics.

Although some similarities can be noted between the present build-up in inventories and the earlier accumulations, it is quite clear that economic conditions today are different in important respects from those prevailing earlier. In the period preceding World War II, for example, there were still substantial, if diminishing, amounts of idle resources available, which lessened the inflationary impact of the increased investment in inventories. Prior to Korea the economy was operating at a postwar peak with comparatively little slack, so that the rise in inventories has already had significant inflationary effects.

The purpose of this article is to review movements in inventories since Korea both in broad outline and in some industry detail, and to relate these developments to the changes in the over-all economic situation in the past 6 to 9 months.

Summary

Following are the major points brought out in the present article:

(1) Although book values have increased steadily since last July, physical accumulation did not begin until the final quarter of 1950. This change to accumulation has accounted for a substantial part of the increase in total production since last fall. The attempts that were made to build up stocks in the third quarter and the actual increase since then have contributed markedly to the rise in prices.

(2) Despite the large rise in stocks, aggregate business inventories at present do not appear excessive guaged by past relationships of inventories and sales in peacetime years. However, there is considerable variation in the present status of inventories by broad and detailed industry divisions and in some lines inventories are high.

(3) In manufacturing, stocks of durable goods producers appear low relative to sales compared to most years since 1939 except for the war years. Stocks of primary metal producers seem relatively lower than those of metal fabricators. In nondurable manufacturing, the relatively high inventories in the textile and apparel fields stand out in contrast to the comparatively low inventories in the petroleum, rubber, chemicals and paper industries.

(4) Aggregate retail inventories appear somewhat high in relation to sales, but not unduly so. Relatively high inventories are especially noticeable in the case of apparel, general merchandise stores, specific types of home furnishings and building material and hardware dealers.

(5) At wholesale, inventories of durable goods do not appear excessive in terms of sales volume; stocks are comparatively heavy in nondurables, especially in apparel and dry goods lines.

(6) As the year progresses and activity increases businessmen will probably attempt to add further to their overall inventories in the absence of new controls. In certain important areas, notably metal and metal products industries and certain nondurable fields directly affected by the defense program, businessmen may be expected to try to increase their stocks even more than sales will rise, although supply limitations will interfere with this process. However, in other areas in the near future—particularly at retail—there may be some short-term liquidation. There is already evidence of this in the spring "sales" now going on in the general merchandise field.

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(7) While total stocks are not generally excessive if measured by past norms of inventories to sales, further accumulation in the aggregate would add to inflationary pressures, which will be augmented by the rise of Government expenditures during the rest of the year as well as by the increase in outlays for private productive facilities.[1] Any unnecessary inventory accumulation would also make more difficult the solution of the materials and manpower problems associated with the mobilization program. Experience during World War II has indicated that when necessary, an extremely high level of activity can be supported by a relatively low volume of inventories.

Stocks higher in all major lines

At the end of June 1950, the book value of manufacturing and trade inventories totaled approximately $54 billion; of this amount manufacturers held $30 billion, wholesalers $9.5 billion, and retailers $14.7 billion. By the end of February, the latest date for which statistics are available, manufacturers' stocks were up by $5.6 billion, while wholesale and retail inventories were up by $1.7 billion and $3.1 billion, respectively; percentagewise the increases since June have been roughly equal. Total business inventories increased $2.2 billion in the third quarter of 1950, $5.2 billion in the final quarter and $3.1 billion in the first 2 months of this year. (See table 1.)

When prices are taken into account, it would appear that somewhat over two-thirds of the rise since June has reflected higher replacement costs. Moreover, it can be seen from chart 1 that in physical terms inventories decreased during the third quarter but have increased substantially since last fall. The actual decrease during the third quarter occurred at all levels except retail, where stocks rose in spite of the heavy wave of consumer buying last summer.

Table 1.—Book Value of Inventories, Seasonally Adjusted, by Industry, and Percent Change, Selected Periods, June 1950 to Date

[Inventories in billions of dollars]

Industry	Book value, end of month				Percent change			
	June 1950	Sept. 1950	Dec. 1950	Feb. 1951 p	June–Sept.	Sept.–Dec.	Dec.–Feb.	June–Feb.
Total	54.2	56.4	61.6	64.7	+4.0	+9.2	+5.0	+19.4
Manufacturing	30.0	30.7	34.1	35.6	+2.3	+11.1	+4.4	+18.7
Durable	14.0	14.1	16.5	16.7	+0.7	+12.1	+3.7	+19.3
Nondurable	16.1	16.7	18.3	18.9	+3.7	+9.6	+3.3	+17.4
Wholesale	9.5	9.9	10.8	11.2	+4.2	+9.1	+3.7	+17.9
Durable	2.3	2.1	3.0	3.3	−8.1	+15.1	+3.6	+15.2
Nondurable	7.2	6.8	7.2	7.4	+6.7	+5.9	+2.8	+10.4
Retail	14.7	15.8	16.8	17.8	+7.6	+6.3	+6.0	+21.1
Durable	5.6	5.8	6.6	6.9	+3.6	+13.8	+4.5	+23.2
Nondurable	9.1	10.0	10.1	10.9	+9.9	+1.0	+7.9	+19.8

p Preliminary.

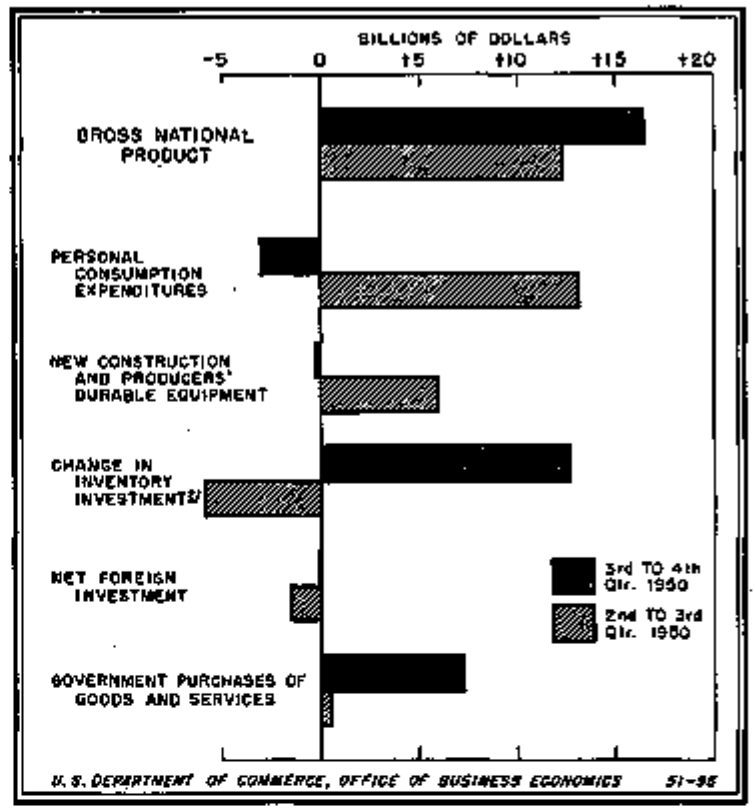
Source: U. S. Department of Commerce, Office of Business Economics.

Relationship to rise in total production

Changes in gross national product according to its major components are illustrated in chart 2 in order to indicate how the recent inventory changes are related to the changes in over-all economic activity.[2] The data are in terms of seasonally adjusted annual rates.

[1] For a discussion of prospective plant and equipment outlays, see this SURVEY, p. 11.
[2] The bars designating changes in inventory investment include farm inventories. This has only a negligible effect on the nonfarm picture for the periods shown.

Chart 2.—Gross National Product: Change Between Second and Third and Third and Fourth Quarters of 1950 [1]



[1] Changes represent absolute differences between quarterly totals, seasonally adjusted, at annual rates.
[2] Includes both farm and nonfarm inventories.

Source of data: U. S. Department of Commerce, Office of Business Economics.

The chart points to consumer buying as the primary source of expansion between the second and third quarters; in fact, the rise in consumer purchases was somewhat greater than the total increase in current output. This does not mean that consumer buying was the only factor in the expansion, however. The Government program, stemming from the hostilities in Korea, was a major influence in stimulating business and consumer demand, even though actual Government expenditures did not rise appreciably. Fixed business investment underwent a sharp upswing. Businessmen also tried to add to their inventories, but the data show that their initial attempts were defeated by the strong upsurge in consumer demand.

The changes in the final quarter emphasize the expansionary force of business purchasing, reflected in the inventory increase. Of the $16 billion advance in gross national product, three-fourths was attributable to the changed investment patterns in inventories. Fundamentally, this changeover to inventory accumulation became possible only after the rate of consumer buying had subsided a little.

The rate of accumulation slackened somewhat in the first quarter of 1951 but was still of considerable magnitude.

Relation of Government expenditures

The relationship between Government expenditures and business investment in inventories in a period like the present requires some further elaboration. It is clear, of course, that a large military program involves a building up of raw materials and goods-in-process prior to delivery of finished output and subsequent payment by the Government. Some inventory investment takes place, however, which does not

appear in the business accounts. Accumulation of inventories by the Government, like additions to the stockpile of critical materials, or materials owned by the Government but processed by manufacturers, is included in Government expenditures. It should be noted also that where Government payments are made against partially completed work, stocks held by business for use in Government contracts are listed as receivables rather than inventory. These considerations have resulted in some understatement of the rise in business inventories since Korea; they were much more important during World War II.

Bank credit important in inventory rise

It is not the purpose of the present article to discuss the financing of the current inventory expansion but it is important to note that much of the addition to stocks has been financed by bank borrowing. Although direct data on inventory financing are not available, it has been a major factor in the rise of commercial and industrial loans in commercial banks, amounting to about $5 billion in the last half of 1950 and an additional billion in the first quarter of 1951. Short term bank loans to United States corporations, characteristically an important source of inventory financing, are estimated to have increased $3 billion between June and December of last year; this compares with an estimated $6½ billion increase in the book value of corporate inventories over the same period. Some of the increase in bank loans has been used, of course, to finance the increase in other assets besides inventories.

Readily available bank credit undoubtedly facilitated the rise in inventories, but business has had other sources of actual and potential investment funds. Business firms have been in a highly liquid condition for some time and could use internal funds to finance profitable investment opportunities. Alternatively business could have gone to the capital markets for needed funds, tapping idle funds of investors. While interest rates have risen a little, this should be no substantial deterrent to bond financing with profits rising sharply. Stock flotations could also have been expanded if this choice seemed desirable to corporate management; so far it has not, to any considerable extent, even though the stock market has advanced markedly in the past 9 months.

Manufacturers' Inventories

The setting for the post-Korea inventory expansion—the first half of 1950—was a period of marked recovery, notably in durable goods, which brought industrial production to a postwar high in the second quarter of the year. Manufacturers were in the process of bolstering their inventory positions, especially raw materials, which had been worked down considerably during most of 1949. However, producers' inventories at mid-year 1950 stood about $2½ billion below the high mark early in 1949, though about half this drop represented a temporarily lower price level.

The changes in the value of manufacturers' stocks since June are summarized in table 1. Relative changes as between durable and nondurable goods have been about the same—19 and 17 percent, respectively. The table points out the small changes in stocks in the third quarter and the sizeable advances which have occurred since September. Stocks of finished goods held by manufacturers in February were about the same as they were in June, but obviously lower in physical terms in view of the price rise. Working stocks—raw materials and goods-in-process— have expanded considerably since June. Some increase in working stocks did occur in the summer months but not enough to offset pronounced declines in finished goods inventories. Since then the rise in working stocks has been quite pronounced and has been augmented by additions to finished goods.

Appraising the inventory position

The problem of appraising the current position of inventories can be approached in a number of ways, none of which is entirely satisfactory. The first approach used here attempts to show how manufacturers have adjusted their inventories to changing business conditions in the past, and then evaluates the recent changes in stocks in this light. There is no implication, it should be added, that the continuation of a normal inventory policy by manufacturers is a desirable one for minimizing inflationary pressures and satisfying the requirements of the mobilization program.

The process of inventory adjustment in manufacturing industry as a whole was described in a SURVEY article 2 years ago in some detail and is reviewed here only briefly.[3] In general it was found that the level of inventories tended to change much more moderately than sales and that several months elapsed before manufacturers brought their stocks in line with a changed volume of sales. Analysis revealed that during the period 1926–40 the lag in adjusting stocks to sales averaged approximately 6 months; it was somewhat longer in durable goods and a little shorter in nondurables.

There are a number of reasons for the lag though it is not possible to evaluate them quantitatively. First is the lapse of time involved between the placement of the order with the supplier and its receipt in inventory. Moreover, under ordinary circumstances producers do not immediately react to an increase in sales because they are uncertain as to how long the rise will continue. Only after they feel some assurance that the advance is not temporary will they place orders to replenish depleted stocks.

Price expectations also have some effect on inventory management, particularly when the price outlook is fairly definite, as it was last summer.

Chart 3 compares the results of a correlation between manufacturing inventories and lagged sales with actual inventories at the end of each quarter. It is clear that in the period between 1926 and 1940 the values of inventories calculated from the regression and the actual values were in close correspondence.

Total manufacturing inventories in line

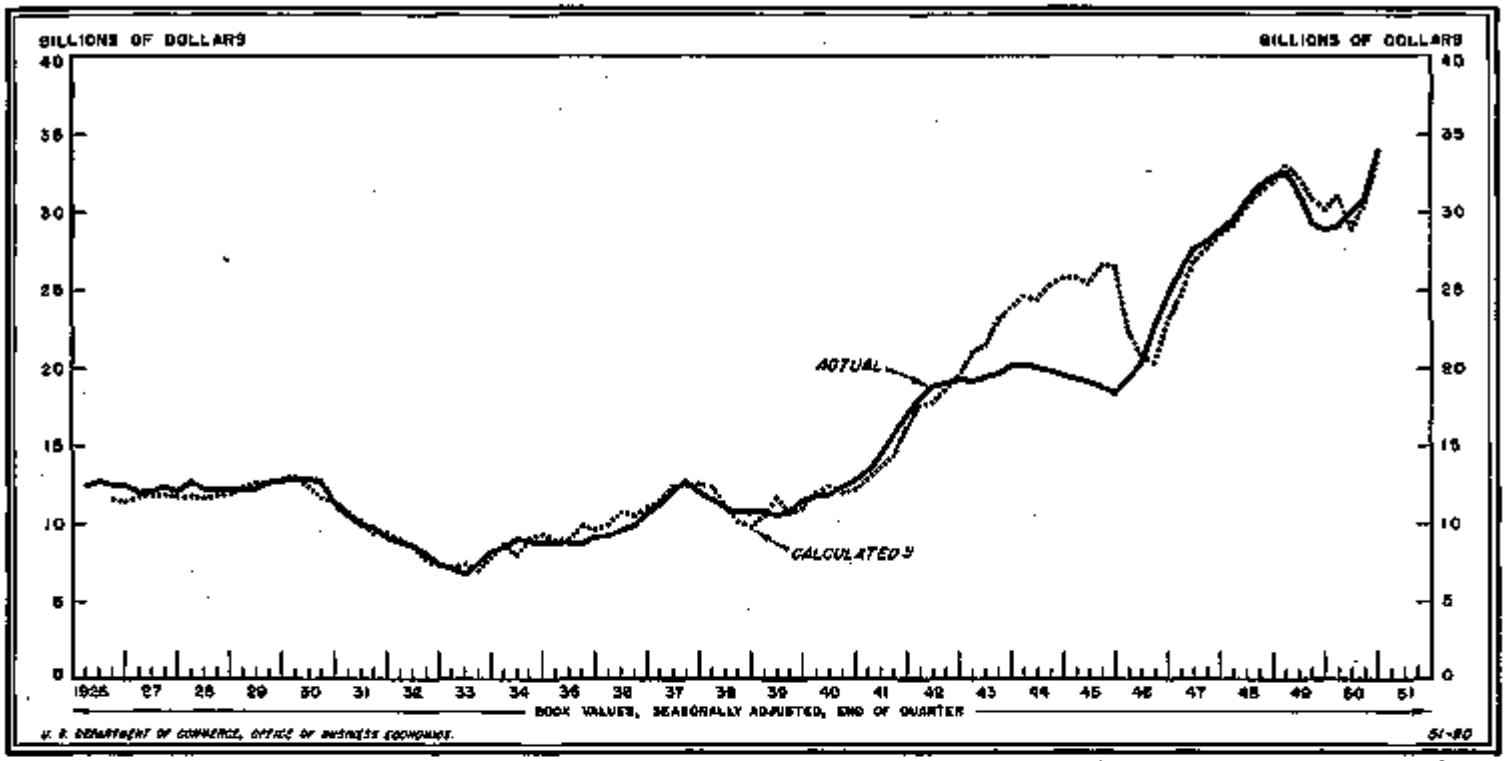
When actual inventories in the recent period are compared to the values obtained by projecting the 1926–40 relationship to the present, it appears that manufacturing inventories at the beginning of this year were about in line with what would be expected from a continuation of the prewar relationship.

It is difficult to determine the extent to which factors normally governing inventory management change under conditions like those prevailing in the second half of 1950. On the one hand, the element of uncertainty about the future course—or at least direction—of total business activity was absent last summer to a greater extent than usual. The sharp upturn in new orders and sales and the quick reaction of prices last summer, especially in primary markets, indicate that producers as a whole lost little time in attempting to stock up. However, the physical difficulties in obtaining goods may also have been more pronounced because the economy was operating at an extremely high rate and backlogs were substantial. As noted earlier, moreover, the pressure of final demand was extremely heavy. It was only with the easing of demand pressure from the midsummer peak that manufacturers were able to expand their stocks.

A continuation into 1951 of the relationship shown in chart 3 would imply a further sizable expansion of stocks in

[3] "Current Inventory Developments," SURVEY, April 1949.

Chart 3.—Manufacturers' Inventories: Actual and Calculated



[1] Calculated values obtained from linear regression equation fitted to data for the years 1926–40; inventories equal 3.244+0.64 (book sales two quarters earlier, seasonally adjusted.

Source of data: U. S. Department of Commerce, Office of Business Economics.

the months ahead. Statistically this is because the calculated value of inventories at the end of 1950 is based on second quarter 1950 sales, which were substantially lower than they are currently. Additional accumulation of manufacturers' stocks is likely to occur, but will be conditioned by a number of factors, discussed later.

Stock-sales ratios

A second approach to the appraisal of inventories is afforded by a comparison of stock-sales ratios, stocks being related to current rather than past sales. In this analysis current stock-sales ratios will be compared with ratios over the past decade, with particular emphasis on the postwar period. With manufacturing, this use of the more recent years as a basis for comparison gives somewhat different results from the previously discussed regression analysis, which is based on the experience between the two World Wars. The results, however, do not differ seriously and emphasis on the more recent period is believed to give a more appropriate frame of reference.

Stock-sales ratios exhibit considerable cyclical variability in manufacturing. They generally fall as sales increase, for example, at least in the early stages of an upturn. Since producers probably desire to maintain a fairly constant percentage between working stocks and output, the inverse movement of the ratio at such a time reflects the difficulties in a quick inventory adjustment. Nevertheless, even though a low ratio in a given period of high sales volume may not necessarily represent what businessmen have tried to achieve, it does indicate the level of sales it was possible to sustain with a given level of inventories. For goods-in-process in many industries technological considerations also tend to enforce a roughly constant ratio to sales. On the other hand, manufacturers—with certain exceptions—do not ordinarily try to increase finished goods stocks proportionately with a rise in output, so that for this reason alone the aggregate stock-sales ratio would tend to fall with a sales rise.

Valuation problems impose a further difficulty in the interpretation of stock-sales relations based on book values. For example, the LIFO method—which covers only a small fraction of manufacturing inventories but which has been gaining in importance in recent years—tends to give the ratios a downward bias on a rising market since it values inventories at prices which prevailed at some time in the past, while sales reflect current prices.[4]

Another problem arises because of the possible change in the product mix. Finally, too much importance should not be attached to the stock-sales ratio in any particular month because of the possibility of erratic behavior, particularly in sales. All of these qualifications clearly affect, but are not believed to seriously distort, the broad results discussed below.

Manufacturing ratio not high

For manufacturing as a whole, current stock-sales ratios do not appear high, as may be seen by reference to table 2. The ratio of 1.54 for February 1951 may be compared with a ratio of approximately 1.7 in 1947 and 1948. Only in the 1943–45 period, when stocks were unusually low relative to sales, were the stock-sales ratios lower.

There are, however, differences as between durable and nondurable industries. For durable goods as a whole the ratios in January and February were lower than in any year since 1939 except for the 1943–45 period. With nondurables, on the other hand, the ratios early in 1951 were about the same as those in 1947 and the first part of 1948. If the current ratios are qualified to take account of the downward bias implicit in the LIFO method and the inverse behavior ordinarily expected with higher activity, the durable ratio would still appear low but the nondurable ratio might be a little high compared with 1947 and the first part of 1948.

[4] Another bias in the ratios may arise because raw materials prices tend to be more sensitive than prices implicit in manufacturers' sales so that the real volume of raw materials may be overstated relative to sales on a rising market. As an offsetting factor, current inventories reflect prices a few months back. The Office of Business Economics plans shortly to initiate a study of deflated manufacturers' inventories by stage of fabrication.

Table 2.—Ratio of Manufacturers' Inventories to Sales, by Industry, 1939 to Date

Period	Total manufacturing	DURABLE GOODS INDUSTRIES										NONDURABLE GOODS INDUSTRIES											
		Total	Iron, steel, and products	Nonferrous metals and products	Electrical machinery and equipment	Machinery, excluding electrical	Automobiles and equipment	Transportation equipment excluding automobiles	Furniture and finished lumber products	Stone, clay, and glass products	Other durables	Total	Food and kindred products	Beverages	Tobacco manufactures	Textile mill products	Leather and products	Paper and allied products	Printing and publishing industries	Chemicals and allied products	Petroleum and coal products	Rubber products	Other nondurables
1939	2.11	2.67	2.82	2.76	2.44	3.28	1.45	2.72	2.35	2.16	2.95	1.84	1.21	1.94	3.04	2.50	2.41	1.90	0.98	2.14	2.04	2.34	1.50
1940	2.06	2.29	2.46	2.39	2.18	2.89	1.33	2.70	2.25	2.07	2.40	1.89	1.22	1.93	4.08	2.62	2.45	1.91	.96	2.13	2.07	2.61	1.67
1941	1.78	1.93	1.93	1.81	2.14	2.38	1.34	2.42	1.87	1.66	1.82	1.67	1.12	1.78	4.65	2.00	1.89	1.64	1.02	1.83	1.90	2.05	1.48
1942	1.77	1.85	1.99	1.84	2.46	2.27	1.63	1.80	1.84	1.87	1.94	1.70	1.06	1.70	4.77	2.00	2.01	1.78	1.11	2.10	1.85	2.17	1.05
1943	1.61	1.67	1.64	1.44	2.30	2.00	1.12	1.41	1.67	1.02	1.33	1.46	1.01	1.36	4.61	1.81	1.67	1.43	.88	1.76	1.53	1.45	1.24
1944	1.46	1.50	1.42	1.49	1.87	1.93	1.12	2.46	1.43	1.61	1.37	1.40	1.01	1.40	4.32	1.71	1.56	1.33	.85	1.58	1.38	1.34	1.22
1945	1.48	1.60	1.49	1.60	1.99	2.07	1.32	1.74	1.69	1.47	1.30	1.38	.93	1.38	5.42	1.80	1.66	1.30	.81	1.56	1.34	1.28	1.13
1946	1.68	2.08	1.91	1.91	2.48	2.69	2.22	2.08	1.48	1.25	1.37	1.41	.82	1.60	5.37	1.70	1.48	1.23	.82	1.58	1.49	1.54	1.15
1947	1.71	2.03	1.69	2.01	2.54	2.90	1.78	3.87	1.67	1.45	1.54	1.49	.87	2.01	6.37	1.88	1.54	1.32	.93	1.81	1.29	1.80	1.52
1948	1.72	1.90	1.63	1.88	2.46	2.68	1.04	3.96	1.71	1.39	1.62	1.54	1.00	2.11	5.34	1.90	1.57	1.54	1.02	1.78	1.20	2.14	1.71
1949	1.85	2.12	1.93	2.44	2.44	2.97	1.54	2.93	1.98	1.62	1.82	1.64	1.02	2.21	5.61	2.24	1.97	1.68	.98	1.87	1.52	2.29	1.80
1950	1.54	1.61	1.44	1.80	1.70	2.37	1.26	2.01	1.69	1.13	1.31	1.49	.99	2.17	6.70	1.96	1.64	1.24	1.08	1.80	1.24	1.40	1.63
1-Q	1.71	1.87	1.66	2.10	1.99	2.73	1.41	2.31	1.90	1.24	1.67	1.59	1.05	2.46	6.58	2.11	1.91	1.41	.92	1.74	1.42	1.90	1.57
2-Q	1.57	1.64	1.47	1.91	1.83	2.42	1.18	2.14	1.70	1.21	1.35	1.52	1.00	1.91	6.69	2.14	1.85	1.40	.99	1.54	1.25	1.68	1.32
July	1.48	1.60	1.44	1.70	1.78	2.34	1.23	2.02	1.66	1.16	1.28	1.38	0.90	1.77	5.14	1.87	1.61	1.33	1.02	1.61	1.17	1.16	1.68
Aug	1.38	1.38	1.38	1.56	1.45	2.17	1.04	1.81	1.38	1.00	1.07	1.24	0.87	1.91	4.00	1.49	1.40	1.06	.97	1.22	1.10	1.06	1.32
Sept	1.42	1.49	1.37	1.63	1.46	2.22	1.25	1.70	1.55	1.04	1.11	1.39	0.93	2.42	6.21	1.73	1.73	1.09	.96	1.31	1.19	1.32	1.55
Oct	1.52	1.57	1.35	1.61	1.40	2.29	1.22	1.70	1.59	.98	1.18	1.47	1.02	2.56	6.26	1.83	1.83	1.04	1.03	1.30	1.10	1.27	1.58
Nov	1.53	1.52	1.37	1.61	1.64	2.33	1.35	1.79	1.52	.98	1.18	1.44	1.07	2.57	6.07	2.09	2.10	1.04	1.11	1.40	1.16	1.37	1.60
Dec	1.58	1.59	1.32	1.60	1.67	2.28	1.42	2.01	1.85	1.08	1.25	1.57	1.03	2.43	6.36	2.22	2.34	1.07	1.13	1.52	1.19	1.31	2.07
1951:																							
Jan	1.46	1.51	1.28	1.72	1.49	2.13	1.36	2.06	1.68	1.03	1.29	1.45	.94	2.31	5.53	2.05	1.80	1.07	.97	1.38	1.20	1.20	1.76
Feb	1.54	1.67	1.34	1.72	1.44	2.20	1.41	2.25	1.62	1.04	1.38	1.52	1.05	2.50	5.70	2.15	1.67	1.16	.94	1.44	1.10	1.19	1.85

p Preliminary.

Note: Quarterly and annual ratios are based on averages of monthly sales and inventories. Monthly ratios represent average of beginning and ending inventories divided by sales during month. Quarterly and monthly ratios based on seasonally adjusted data.

Source: U. S. Department of Commerce, Office of Business Economics.

Stock-sales ratios by stage of fabrication

In spite of the large additions which have been made to working stocks there is no indication in over-all terms that these inventories appear high relative to sales. Indeed, in comparison with postwar years these ratios appear somewhat low in the case of durable goods.

Table 3 presents ratios of inventories by stage of fabrication to sales, in durable and nondurable goods manufacturing, for selected periods since the first quarter of 1946. In the first quarter of 1948, a period when industrial activity was high and most of the wartime deficit in inventories had been made up, raw materials stocks and goods-in-process in durable goods manufacturing were 1.4 times average monthly sales, as against a ratio of 1.2 in February of this year. In nondurables there is comparatively little difference between the two periods.

Stocks of finished goods relative to sales in durable goods industries were low compared to previous postwar years though the inverse behavior of this ratio should be kept in mind. They were even somewhat below the ratio in early 1947, a period when supplies of finished goods stocks were still quite depleted. On the other hand, the current ratio in nondurable goods was above the low ratio of early 1947 but not much different from the early 1948 figure. It may be recalled from earlier SURVEY articles that starting with the summer of 1948 there was some involuntary accumulation of finished stocks in certain soft goods industries.

Table 3.—Ratio to Sales: Book Value of Manufacturers' Inventories by Stage of Fabrication,[1] Selected Periods, 1946 to Date

Period	Durable goods			Nondurable goods		
	Total	Raw materials and goods-in-process	Finished goods	Total	Raw materials and goods-in-process	Finished goods
1946 1-Q	2.42	1.80	0.62	1.47	0.97	0.50
1947 1-Q	2.02	1.52	.49	1.50	.98	.52
1948 1-Q	1.96	1.43	.53	1.50	.94	.56
1949 2-Q	2.10	1.55	.66	1.73	1.00	.73
1950 1-Q	1.87	1.25	.62	1.61	.91	.71
2-Q	1.65	1.10	.55	1.56	.77	.79
3-Q	1.52	1.05	.47	1.35	.78	.57
4-Q	1.47	1.06	.42	1.47	.89	.56
1951 Jan	1.54	1.11	.42	1.48	.91	.57
Feb. (p)	1.64	1.19	.45	1.60	.99	.60

[1] Data are not adjusted for seasonal variation.
p Preliminary.

Note: Quarterly ratios are based on averages of monthly sales and inventories. Monthly ratios represent average of beginning and ending inventories divided by sales during month.

Source: U. S. Department of Commerce, Office of Business Economics.

Durable goods manufacturing

Among individual durable goods industries there was considerable uniformity in the behavior of stocks and sales in the first months following the outbreak of the fighting last June. The heavy volume of orders in midsummer boosted sales sharply and caused a pronounced drop in finished goods inventories. Since only a small rise in working stocks was possible in such a short time, stock-sales ratios were at a low point for the year and were either below, or not much higher than their wartime levels.

Low stocks in basic metals

Since summer, increases in stocks have been substantial. It is interesting to note, however, that the primary iron and steel nonferrous metal industries have increased their inventories only 6 percent since last September, in contrast to the 20 percent rise in fabricating metal industries (including machinery, transportation equipment, and automobiles).

This differential behavior is due to a variety of reasons.[6] First, it is important to note that immediately before Korea there was relatively little slack in the primary industries as compared with the fabricating end. Consequently, work in process has risen much more in the latter industries than in the former.

In addition, the Government stockpiling program has cut heavily into finished stocks of nonferrous metal smelters and refiners. Finally, difficulties in a rapid stepping-up of mine production, imports and scrap supplies have limited the rise in raw materials stocks in the primary industries, while Government orders for aircraft, tanks, etc., have been reflected in a sharp stepup of working inventories in transportation equipment industries.

Thus, stock-sales ratios in the iron and steel industries early in 1951 were little changed from the low point of last August. Nonferrous metal ratios were not very different although they were higher than during the war. In spite of the inventory rise in the fabrication industries, stock-sales ratios were generally below postwar levels but higher than they were during the war years.

Nondurable manufacturing

The chief difference in the behavior of the stock-sales ratios between durables and nondurables since Korea has been due fundamentally to the differential change in sales. While the durable goods sales maintained their upward movement between the third and fourth quarters because of the underlying strength from mounting defense outlays and private capital expenditures, nondurable sales edged off from the high third quarter rate. The sales drop was quite general, occurring in all industries except paper and petroleum, and emphasizes the anticipatory nature of the third quarter buying in this area. In the meantime the heavy orders that were placed by manufacturers in July and August were being filled, so that stock-sales ratios around the end of 1950 looked somewat high in a number of areas. This situation was only moderately changed by the improvement in sales early in 1951.

Mixed trends are apparent when individual industries are examined. Thus early 1951 stock-sales ratios in rubber, petroleum, chemicals and paper were low compared with other years since 1941, including the war period. By way of contrast the February ratio in apparel was at a postwar peak and in textile mill products was not much below the relatively high ratio in 1949.

Further planned accumulation likely in manufacturing

It should be clear that a substantial increase in manufacturing inventories has already occurred which, nevertheless, cannot be judged excessive for total manufacturing viewed in the light of past relations to sales. Moreover, it seems likely that in many industries further attempts to increase stocks are in prospect though the availability of supplies, Government inventory restrictions, the freeze on prices, and the reaction of banks to the present high value of stocks in some lines will tend to limit the extent of such advances.

Producers will continue to attempt building up raw materials because, in a number of important heavy goods lines particularly, such stocks are low relative to the volume of business. The desire to improve these stocks is probably unusually strong under present and prospective conditions of short supplies. Backlogs of orders for future delivery, which were already substantial even before Korea, have been increasing steadily relative to sales in the past 9 months. Moreover, the full impact of the mobilization program will require further building up of both raw materials and goods-in-process inventories.

It is more difficult to foresee what will happen to finished goods. Although some drop in clothing, textile and certain consumer appliance stocks may occur as a result of intentionally working off inventories this spring, it is quite likely that later this year rising consumer incomes will give a further impetus toward inventory accumulation which, however, will be limited in hard lines by availability of supplies.

Low stock-sales ratio in World War II

It is interesting to note that during World War II manufacturers were able to sustain an extremely high rate of production with a comparatively low volume of inventories. Between the end of 1941 and the end of 1943, which was the high point for manufacturing inventories, the physical volume of manufacturers' stocks rose by less than 15 percent while manufacturing production increased by approximately 40 percent; the differential movement was even more pronounced in durable goods. The general shortage of materials kept inventories relatively low but it was possible to maintain a high production rate because controls over supplies and prices facilitated a more orderly flow of materials. As of the present time some inventory limitations have been instituted, but they are not nearly so restrictive as the World War II controls.

Retail Inventories

Although retailers have experienced two heavy buying waves by consumers, retail stocks have nonetheless advanced 21 percent since last June. About two-thirds of the $3.1 billion increase reflects higher replacement costs. The percentage change in durable goods stores has been slightly larger than in nondurable stores.

Evaluating retail inventories

The historical behavior of retail stocks and sales indicates that retailers, like manufacturers, have characteristically adjusted their stocks to changes in sales only after a number of months have elapsed. Retail stock-sales ratios also generally move inversely with changes in activity.[7]

A number of statistically satisfactory relationships between retail stocks and lagged sales can be obtained from historical data prior to World War II, but the projection of these relationships to the postwar period, especially the most recent years, gives varied results, depending on the form of the relationship.[8] Consequently, in the appraisal of current inventories, attention is directed exclusively to the data on stock-sales ratios.

At retail there is particularly good reason for employing as a frame of reference the stock-sales ratios in the later postwar period (prior to Korea) rather than those in prewar years. This becomes clear by examination of chart 4, which shows that the stock-sales ratios in the postwar period have consistently run below those in prewar years.

There are a number of reasons for this although it is not possible to segregate the separate effects of each. The supply situation, except for certain durable lines, was not a significant factor after the beginning of 1948. Of major im-

[6] The wider prevalence of the LIFO method in the basic industries would work in this direction. However, the differential effect of LIFO can account for only part of the difference, and limited data on physical stocks and consumption lend to bear out the generally low condition of inventories among primary producers.

[7] It may be noted that the policy considerations affecting retail inventories are most closely related to those affecting the finished goods inventories of manufacturers.

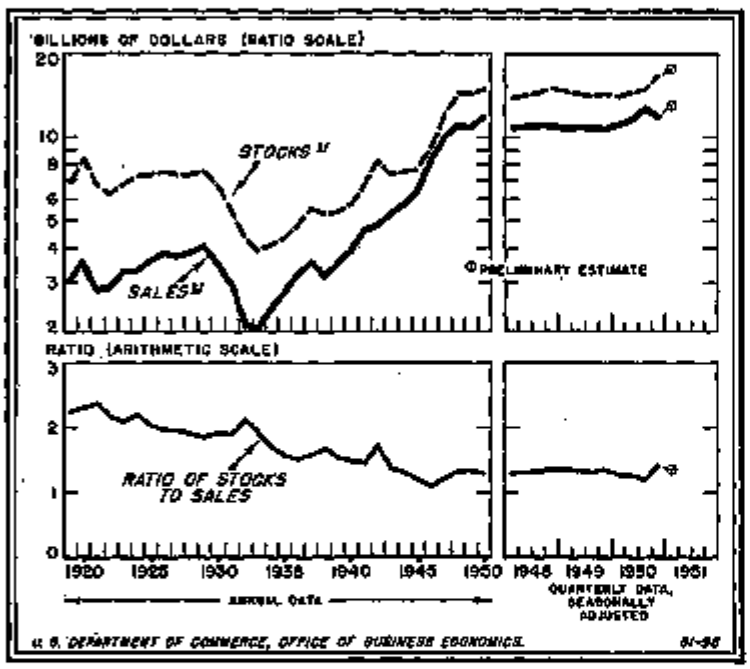
[8] One of the difficulties with the retail correlations is that there is a pronounced downward time trend, discussed below, in the ratio of stocks to sales in the interwar period. It is not known whether the forces underlying this trend have continued to operate to the same extent as before.

portance was the long-term downward trend in the relationship between stocks and sales.[9] There is no reason to believe that this trend, which reflects improved inventory management, has not persisted, although to what extent cannot be determined. In addition, retail sales volume has been much higher than it was prewar and, as past experience has suggested, stocks have not been increased relatively as much as sales.

Movements in retail inventories

In the first half of 1950 retail sales were moving upward, especially in the second quarter, under the influence of rising incomes. Retailers were making moderate additions to their stocks but the period was one of generally falling stock-sales ratios.

Chart 4.—Retailers' Stocks and Sales



[1] Data are end-of-month averages for the year or quarter.
[2] Data are monthly averages for the year or quarter.

Source of data: U. S. Department of Commerce, Office of Business Economics.

The first rush of consumer buying after Korea, manifested in a billion dollar increase in sales in a single month, drew stocks down rather sharply in July. Retailers lost little time in stepping up their orders considerably. Although retail sales during August were maintained at the high July rate, stocks increased by a billion dollars. The substantial inventory rise at retail, occurring in such a brief space of time, was at the expense of finished consumer goods stocks held by manufacturers and by wholesalers.

Peak stock-sales ratio last fall

With the decline in retail sales in September and the continued receipt of goods ordered in the middle of the summer, retailers by September had restored the stock-sales ratio prevailing in the first half of 1950 and had already begun to reduce the volume of their orders.[10] This was manifested in a levelling of retail inventories between the end of October and the close of the year; but the failure of sales to improve prior to the Christmas season, made inventories appear high. The stock-sales ratio in November was higher than any that had prevailed in the postwar period and was not much different from that prevailing in the second half of 1941, a period of substantial accumulation at retail. Stock-sales ratios in retail stores are shown in Table 4.

Table 4.—Retail Stock-Sales Ratios,[1] Quarterly, 1948 to Date

Period	Total	Durable	Nondurable	Automotive group	Home furnishings group	Building materials and hardware group	Apparel group	General merchandise group
1948:								
1-Q	1.29	1.30	1.17	0.93	2.32	2.06	2.14	2.19
2-Q	1.31	1.30	1.17	.97	2.22	2.15	2.28	2.09
3-Q	1.29	1.31	1.20	.93	2.19	2.17	2.33	2.03
4-Q	1.37	1.74	1.23	1.01	2.50	2.36	2.20	2.14
1949:								
1-Q	1.37	1.30	1.19	1.21	2.30	2.23	2.16	2.18
2-Q	1.33	1.60	1.19	1.03	2.24	2.41	2.28	2.07
3-Q	1.31	1.56	1.19	.99	1.93	2.29	2.46	2.04
4-Q	1.35	1.05	1.20	1.14	1.90	2.24	2.42	2.19
1950:								
1-Q	1.26	1.42	1.18	.84	1.85	2.22	2.39	2.28
2-Q	1.26	1.37	1.20	.76	2.11	2.05	2.42	2.17
3-Q	1.18	1.19	1.18	.65	1.59	1.90	2.47	1.93
4-Q	1.41	1.61	1.30	.99	2.44	2.41	2.61	2.38
1951:								
Jan.	1.28	1.41	1.22	.79	2.00	2.17	2.25	2.13
Feb.[p]	1.35	1.48	1.30	.80	2.16	2.25	2.55	2.42

[1] Based on seasonally adjusted data.
[p] Preliminary.

NOTE.—Quarterly ratios are based on averages of monthly sales and inventories. Monthly ratios represent average of beginning and ending inventories divided by sales during month.

Source: U. S. Department of Commerce, Office of Business Economics.

Notwithstanding the high stocks at the end of 1950 retail orders in January were stepped up markedly as consumer purchases again moved sharply upward, and inventories rose by $600 million. With the edging off in sales in February, the stock-sales ratio was approximately 1½, a little lower than it was in the fourth quarter, but about the same as it was in late 1948 and early 1949, a period when stocks were higher than retailers would have preferred.

Retail inventories high

While it might be difficult to conclude that aggregate retail inventories are excessively out of line, retail stocks are historically high relative to sales. It must be remembered that sales volume has increased over pre-Korean levels, so that under normal inventory behavior the stock-sales ratio would be dropping somewhat instead of increasing.

In terms of the longer-term supply-demand situation retail stocks probably are not high in the aggregate. Moreover, there is considerable variation from line to line and these are taken up in the following sections.

Durable goods inventories

Automobile stocks, which bulk large in the total inventories of durable goods stores, have been relatively low—much more so than durable goods inventories as a whole. All durable lines of trade experienced declines in their stock-sales ratios in the third quarter under the influence of heavy consumer buying. The stock-sales ratio in the automotive group in the third quarter was lower than at any time since the early postwar period. Some improvement in the ratio has occurred since then but it is still less than the ratio in 1948, when inventories were comparatively low.

In contrast to the automotive group, stocks in the lumber, building materials and hardware group in the middle of the first quarter were nearly as high, relative to sales, as they were in 1949. Much of the rise in stocks here has reflected the attempt to anticipate shortages; many of the items sold in this group were among the first to be affected by priorities and inventory limitations.

[9] See "Inventory Turnover in Retail Trade," SURVEY, June 1948.
[10] This is evidenced by the trend of orders placed by large department stores reporting to Federal Reserve banks.

Home furnishing stores

The most pronounced sales increases last summer occurred at home furnishings stores, where sales jumped almost 30 percent between the second and third quarters. In contrast to the automotive group, dealers were not long in building up inventories, and by the end of September the book value of stocks ran 10 percent higher than in June. The supply situation in automobiles, of course, was relatively tighter; in addition, home furnishings dealers drew heavily on stocks of wholesalers, who are important in the distribution of most appliances.

As sales receded from their midsummer peak and goods moved into retailers' hands, home furnishings inventories in October rose by a quarter billion dollars. In the meantime new orders were being cut substantially and stocks leveled off in November and dropped somewhat in December. The stock-sales ratio in November was well above the previous peak in the closing months of 1948, when sales were dropping sharply and inventories becoming burdensome.

Table 5.—January Stock-Sales Ratios in Homefurnishings Departments of Department Stores, 1948–51, and Percent Change in Stocks, Jan. 1950–Jan. 1951

Item	January stock-sales ratios				Percent change in stocks January 1950–January 1951
	1948	1949	1950	1951	
All Homefurnishings [1]	4.0	4.4	3.9	5.7	+49
Furniture and bedding	4.3	4.0	3.7	5.5	+31
Domestic floor coverings	3.6	4.0	4.3	3.5	+47
Major household appliances	2.7	4.4	2.6	2.7	+87
Radios, phonographs, television, pianos, records, etc.	4.0	3.7	2.0	3.3	+144
Radios, phonographs, television	4.3	3.4	1.8	3.1	+230

[1] Includes departments other than those shown.

Note.—Ratios equal stocks end of month divided by sales during month. Unlike other tables, stocks are in terms of retail value. Not adjusted for seasonal variation.

Source: Board of Governors, Federal Reserve System.

A substantial correction of the fourth quarter position of home furnishings stocks occurred with the jump in sales in the first 2 months of 1951. In February the stock-sales ratio for home furnishings stores was about the same as it had been in the second quarter of 1950, evidence of the quick shift in these ratios under prevailing conditions.

Changes in specific home furnishings lines

Table 5 presents Federal Reserve data on end-of-January stocks relative to January sales for specific departments in department stores. Also shown are percentage increases in stocks over last January. Stocks in this instance are in terms of their retail value rather than cost, the basis used in the preceding discussion.

Clearly in terms of ratios to sales, home furnishings stocks were not excessive at the end of January. The radio and television department is the only one showing a noticeably higher stock-sales ratio over the previous January and even this is lower than the ratios in earlier periods. Nevertheless, it must be kept in mind that the increase in inventory has been exceptionally large, as the right-hand column of the table shows. To cite an extreme example, the value of stocks of radio, television and phonograph sets, included in the department shown above, had increased by 230 percent over a year ago. The implication of such exceptionally large increases is that even small declines in sales would tend to make inventories rather burdensome. The appearance of price reductions on some television sets in March suggests that sales had edged off somewhat from the high rate in January and attempts were being made to work off heavy inventories.

Nondurable goods inventories

Stock-sales ratios in nondurable goods stores as a whole looked rather high in February 1951 in view of the fact that the ratio had been remarkably uniform in the 2 to 3 years prior to Korea. This condition was more pronounced in the case of apparel and general merchandise stores than in food stores. Thus it is of interest that the apparel stock-sales ratio in February was higher than it was in the first half of 1950 and even exceeded the ratio in the third quarter of 1949, which represented the earlier peak postwar stock-sales ratio in this field.

Changes in general merchandise stores have been influenced to a large extent by developments in apparel and home furnishings; in department stores these two categories account for roughly three-quarters of total sales, apparel being about twice as important as home furnishings. In view of the previous discussion it is not surprising that the February 1951 stock-sales ratio—which may have some downward bias because of LIFO—was at a postwar peak. The easing of sales in March suggests a further rise in the stock-sales ratio.

World War II experience

There are certain points of similarity in the recent build-up of retail stocks and the accumulation in the latter half of 1941. Since the summer of 1940 consumer income and spending had been rising markedly under the influence of increasing defense outlays. Stocks had been advancing moderately but stock-sales ratios were undergoing a steady decline. In the summer of 1941 retail sales of nondurable goods and durable goods except autos spurted upward as widespread defense controls were imposed over production and the prospects of reduced civilian supplies loomed ahead. Most retailers stepped up their orders considerably in expectation of continued heavy demand, higher prices and lower supplies.

The third quarter buying wave subsided in the final quarter of 1941 despite higher incomes, but the decline was confined exclusively to durable goods. Aside from automobiles, where sales were limited by production restrictions, sales in other durable lines moved back to their second quarter levels. The issuance of Regulation W on consumer credit undoubtedly accentuated the extent of the sales decline. In the meantime, retail stocks continued to mount in both durable and nondurable fields and stock-sales ratios were back to their comparatively high 1938 levels, and by mid-1942 were well in excess of those.

Reduced supplies, growing out of the cessation of civilian production of a number of metal-using items, and some reduction in other goods, reversed the upward movement of stocks at retail after mid-1942. This process was abetted by the general price freeze in the spring of 1942 and later in the year by Government inventory controls which limited stock-sales ratios in larger stores to their 1939–41 average levels. However, it was not until the first half of 1943 that the stock-sales ratio for all stores combined returned to its early 1941 level.

Wholesale inventories

Wholesale inventories have behaved differently from those of retailers even though the percentage change between June and February—18 percent—is not much different from the retail increase. In durable goods, receipts of goods from manufacturers were so low relative to retail and other business takings last summer that it was not until the end of October that the dollar value of wholesale inventories was back to its June level; this represented a lower physical volume of goods in view of the price rise. Where durable

inventories at retail have increased only 7 percent since the end of October, over the same period stocks of durable goods wholesalers have advanced by over half a billion dollars, or 17 percent. This reflects the easing in demand pressures from retailers and the increased flow of goods from manufacturers.

There were a number of differences in the changes by line of trade. Stocks of metal and machinery wholesalers, who service smaller manufacturers, were no higher in dollar terms in February 1951 than last June, while in electrical goods the rise was not much different from the price increase. Pronounced rises took place among furniture, housefurnishings and lumber wholesalers; much of this has taken place between the end of November and February.

For durable goods as a whole the stock-sales ratio early this year was about the same as it had been in the first part of 1948, prior to the accumulation of stocks and drop in sales which carried through much of 1949.

The behavior of wholesalers' nondurable inventories since Korea has paralleled that of nondurable retailers. Inventories decreased in July but by August were already above the June level and have continued to mount since. The stock-sales ratio for all nondurable wholesalers in February this year was not much below the high ratios in late 1948 and 1949.

A substantial portion of the nondurable increase has taken place with apparel and dry goods wholesalers, where stocks have risen quite sharply, even allowing for the marked price rise in this field. In this connection it will be recalled that textile and apparel stocks are rather high at all levels.

Business Investment and Sales Expectations in 1951

(Continued from page 18)

be provided in places where workers are drawn. However, not all of the peak investment currently being made or planned for this year is related to the military effort. In view of the further inflationary pressures implicit in the planned expansion of defense and related expenditures, and the materials scarcities which will arise, additional curbs upon investment not essential for the mobilization effort may have to be imposed well before the first half of next year when the present defense program is scheduled to reach its maximum rate.

It should be reiterated that, though important, fixed investment by business is only one of the areas of private demand which will result in an increasing excess of demand over available supplies. The upsurge in inventories and in consumer buying—notably of durable goods—has been reviewed in other sections of this issue. It is clear that further action—whether this takes the form of direct controls or monetary and fiscal measures, or both—will be required to insure the channeling of sufficient resources for defense purposes and to avoid inflationary excesses. In such a period Government policy must be directed toward curtailing that part of investment as well as consumption not essential to the mobilization effort.

New or Revised Statistical Series

Machine Tools, Index of New Orders: New Series for Page S–34[1]

(1945–47=100)

Month	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
January	52.1	34.6	40.0	133.5	250.4	278.7	222.8	104.6	208.9	116.6	71.7	83.1	57.0	99.7
February	51.1	24.0	51.7	135.6	214.5	471.1	270.4	118.9	206.4	79.6	63.9	77.3	62.0	89.2
March	64.3	34.5	57.5	191.5	231.4	1,104.5	348.5	142.9	181.9	105.3	74.3	80.3	63.5	107.4
April	54.9	28.7	48.7	194.2	215.8	902.1	245.4	184.7	172.4	133.4	68.9	85.3	76.1	98.9
May	61.6	21.3	60.0	117.4	219.8	630.9	212.9	207.2	154.8	107.9	76.9	73.5	63.7	118.4
June	57.2	22.3	68.3	145.8	281.7	462.7	170.6	162.3	123.3	100.1	80.9	83.4	63.6	124.1
July	53.4	28.7	73.0	132.9	313.2	377.3	140.2	121.6	100.2	90.0	81.1	74.0	48.0	283.1
August	64.3	38.2	64.6	178.5	325.0	392.1	130.2	147.0	103.1	90.9	82.1	73.7	51.5	303.1
September	65.9	37.5	110.4	229.6	304.7	331.2	125.5	123.5	85.8	88.4	83.7	73.1	57.7	290.6
October	48.7	36.0	100.0	338.5	240.2	303.8	118.1	206.6	92.3	85.3	81.0	67.4	60.8	292.5
November	39.9	34.2	174.2	250.3	322.3	343.0	127.2	210.6	89.1	73.2	75.6	72.2	84.3	291.9
December	42.9	47.0	204.5	294.7	383.3	305.5	114.1	221.2	119.6	72.7	81.1	70.7	82.5	410.1
Monthly average	56.2	32.3	100.0	176.2	281.3	510.0	180.9	165.6	128.3	95.8	74.3	77.2	59.1	203.6

[1] Compiled by the *National Machine Tool Builders' Association*; based on the dollar volume of shipments reported by Association members which are estimated to account for 90–95 percent of the total industry orders and shipments.

Machine tools included in the index are machine tools of the metal-cutting type, defined as power-driven, complete metal-working machines, not portable by hand, used for progressively removing metal in the form of chips. The index does not include data for machine tools of the type that form metal, such as presses and forging machines.

For data beginning 1951, see p. S–34.